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TWO SIBLING SPECIES OF NASSARIINAE IN THE MEDITERRANEAN SEA (PROSOBRANCHIA: MURICIDAE, NASSARIINAE) (*)**

KEY WORDS: *Nassarius*, *Radula*, sibling species, larval ecology, protoconch, Taxonomy, Mediterranean Sea.

Riassunto

L'esame della struttura radulare mostra come *Nassarius gibbosulus* e *N. circumcinctus* siano da ritenersi specie distinte, probabilmente 'sibling species': i laterali di *circumcinctus* sono infatti denticolati, mentre sono semplici in *gibbosulus*. I parametri dimensionali delle rispettive protoconche sembrano indicare inoltre differenze nello sviluppo: *N. circumcinctus* possiederebbe una fase larvale planctotrofica, mentre *N. gibbosulus* mancherebbe di tale fase.

Abstract

After radular and protoconch examination *N. gibbosulus* and *N. circumcinctus* are suggested to be sibling species. The two species should differ in their developmental pathways, *N. circumcinctus* having a planktotrophic larval phase, and *N. gibbosulus* lacking this stage.

Since from the last century several Authors discussed the actual status of the two taxa *Nassarius gibbosulus* (L., 1758) and *N. circumcinctus* (A. Adams, 1851) (cfr. MALATESTA, 1974; ABBOTT & DANCE, 1982). SABELLI et al. (1990) treat them as distinct species. According to KHAYRALLAH & MATTAR (1987), radular examinations would confirmate their conspecificity. In this view *N. circumcinctus* should be considered simply as the young stage of *N. gibbosulus* or a small size 'form' of it. It must be pointed out that similarity in radular morphology should not be taken as absolute conspecificity criterion, especially when other features lead in the opposite direction; the same view is shared by BOUCHET (1989). Moreover, radular structures are known to be rather similar throughout the whole (sub)family (CERNOHORSKY, 1984).

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*** Lavoro accettato il 30 maggio 1992.

In a preliminary survey we have been able to examine more than 60 specimens of the two taxa (about 50 spms of *N. circumcinctus* and 15 of *N. gibbosulus*) from the coasts of Turkey (Figs. 2-8). Both 'forms' live there sympatrically perhaps separated bathimetrically or ecologically. Contrary to what stated (and figured) by KHAYRALLAH and MATTAR (1987), radular analysis revealed strong differences in the lateral teeth (Figs. 9-12): those of *N. circumcinctus* are in fact serrated — as in both figs. 1 and 2 of KHAYRALLAH and MATTAR (1987) - while those of *N. gibbosulus* are simple (quite probably the above Authors misidentified their specimens). This should lead to think definitively in terms of distinct species.

Our morphological analysis focused also on protoconch morphology as related to a part of the life cycle. Results were that the protoconchs of the two taxa are different in shape and size (Figs. 13, 14). this would suggest two distinct developmental pathways: *Nassarius circumcinctus* should have in fact a planktotrophic larval phase, while *N. gibbosulus* lacks this stage. Protoconchs of adult specimens are not well preserved; furthermore, *N. circumcinctus* often decollate the apical whorls (Fig. 1, 5-7), a phenomenon never observed in *N. gibbosulus*. As in other Neogastropods, metamorphosis is not clearly demarcated in the shell of these species, and a precise count of the whorls (as well as identification of a Protoconch II in the planktotrophic developer) will request the study of juveniles (possibly reared in aquarium). If our hypothesis on development will be confirmed, non-conspecificity would be also in agreement with the statements of BOUCHET (1989) and HOAGLAND & ROBERTSON (1988) that intraspecific polymorphism as for larval ecology (Poecilogony) is not admitted in the Prosobranchs.

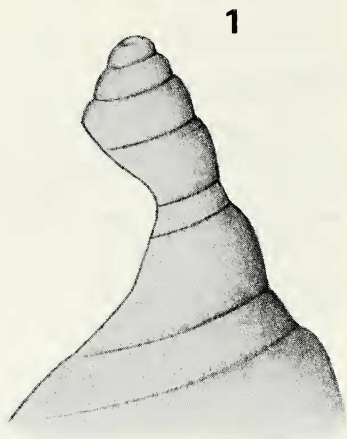
The existence within mediterranean higher Prosobranchs of pairs of «cryptic» species, differing in life cycles by presence or absence of a planktotrophic larval phase, has been recorded several times (see VERDUIN, 1976 a; 1976 b; 1977; 1982; 1985; 1986 a; 1986 b). The families suggested to host these pairs of species were indicated as follows:

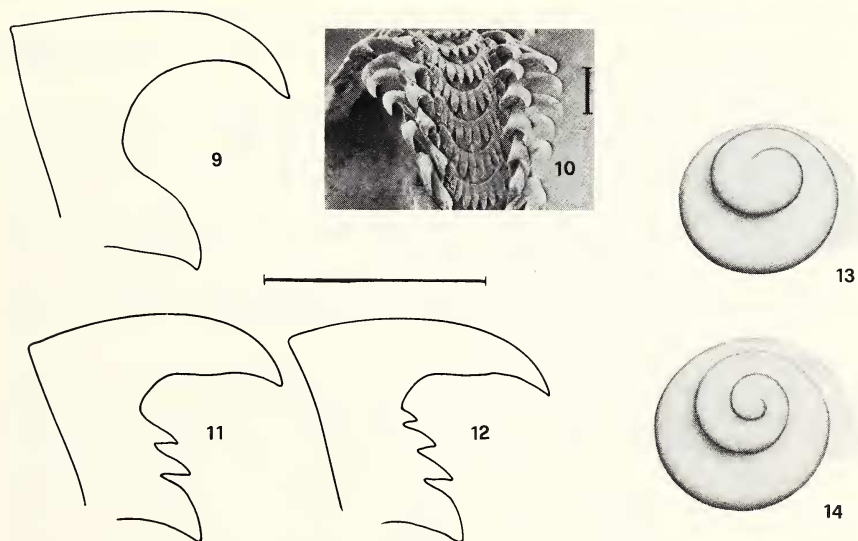
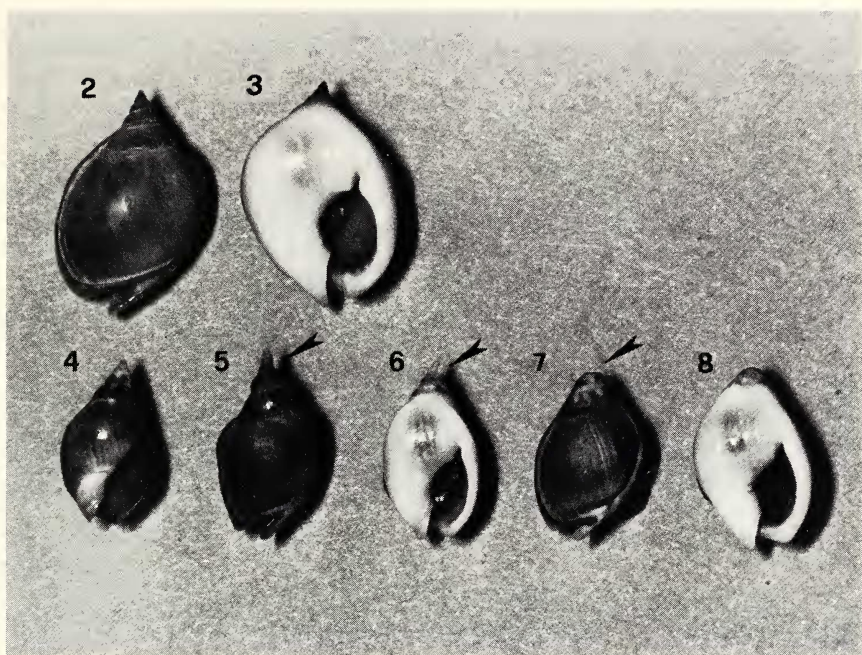
Cerithiidae (*Bittium*)

Turritellidae (*Turritella*)

Rissoidae (*Rissoa-Pusillina* group, *Alvania*)

Turridae (*Raphitoma*, *Bela*)





Figs. 2-14, *N. gibbosulus* and *N. circumcinctus*, Aydincik (Turkey), on sand - 1/4 m - 2, 3: *N. gibbosulus*. 4-8: *N. circumcinctus* (arrows indicate sites of decollation). 9, 10: Lateral tooth (9) and SEM photograph (10) of the radula of *N. gibbosulus*. 11, 12: Lateral teeth of *N. circumcinctus*. 13: First whorls of *N. gibbosulus*. 14: First whorls of *N. circumcinctus*. Line bars 10 mm (Figs. 2-8), 0,1 mm (Figs. 9-12).

No records were reported for the Nassariinae. In the former two families (Cerithiidae and Turritellidae), the sibling status of the species involved is doubtful. As for the others this phenomenon, that appears to be relatively common within mediterranean higher prosobranchs, relates to interesting evolutionary implications (OLIVERIO, 1991).

A more careful study will be carried out on this and other pairs, dealing with living populations, and using a multidisciplinary approach (geneenzyme systems, caryotypes etc.), in order to draw the actual taxonomic meaning and the evolutionary implications of this interesting phenomenon.

Acknowledgements

We wish to thank Mr. G. Fusco (BV/BAU Depts. SEM laboratory of «La Sapienza» Rome University); our friend R. Villa (Roma) collaborated in collecting material.

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